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ABSTRACT

This chapter, Chapter 2 in "the Economics of Gender in Mexico," uses retrospective household survey data from Mexico to assess the long-term impacts of school dropout and of working early in life, in terms of adult labor market returns. Through these data, it is possible to link adult wages to the ages at which individuals started working and quit school. The standard neoclassical model of returns to human capital is modified by using alternative ways of measuring "early experience." The findings show that there is a penalty for dropping out of school and working early in life. Although there are positive returns to early labor market experience, these depend on continued progression through the school system. The results also indicate strong gender disparities. At every level of schooling and early employment, girls pay a greater penalty than boys for dropping out or for working while in school. This may be so because of differences in the types of work that boys and girls engage in at an early age. Boys may be acquiring real experience relevant to adult employment, while girls may be doing domestic work, which does not count in the adult labor market. These findings may also help explain the persistence of gender disparities in adult labor market outcomes, despite the reduction of gender differences in educational attainment. An appendix examines the bias in child and youth employment rates that results from ignoring housework. (Contains 41 references, 10 tables, and 4 figures.) (SV)

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The Impact of Child Labor and School Dropout on Human Capital: Gender Differences in Mexico

Felicia Marie Knaul

Child and youth labor force participation has both long- and short-term consequences for individual, family, and social welfare. It can hinder school attendance and be harmful to the health and psychological well-being of children. In the long term, child labor may affect educational attainment and physical and mental development, with resulting consequences throughout the life cycle.

One measurable link between the short- and the long-term effects is that beginning to work at a young age lowers educational attainment and can lower productivity and adult earning capacity. The effect on productivity will be reflected in the returns to education and to experience. It is an empirical question as to whether the gains from early experience (but lower education) are outweighed by the gains from staying in school (and not working). This question has an important gender dimension. Since the nature of employment both early in life and as adults differs among males and females, it is likely that the returns to education and to experience would also vary by gender. This would be particularly true if one group gains more "marketable" experience than the other, or if their work is more compatible with school attendance. In this case the long-term penalties of dropping out of school and/or working early in life would differ by gender.

This chapter assesses the long-term impacts of school dropout and of working early in life, in terms of labor market returns later in life. The analysis is based on retrospective household survey data from Mexico. Through these data it is possible to observe the wages and other characteristics of adults later in life, and to link these data to information on the age at which these individuals started working and when they quit school. By linking these data the research assesses the effects of age at entry into the labor force and school dropout on adult labor market outcomes.

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The empirical approach of the chapter is to modify the standard neoclassical model of returns to human capital by using alternative ways of measuring "early experience." The analysis explicitly acknowledges the fact that early work may not necessarily be coincident with school dropout. Through this modified approach it is possible to disentangle the effects of various combinations of work and schooling on returns to labor later in life and to develop a taxonomy of effects of early employment and/or school dropout. The models also allow for differences in the nature of early employment for boys and girls, and thus test whether gender differences do exist.

The findings of this chapter show that there is indeed a penalty for dropping out of school and working early in life. They suggest that there are positive returns to early labor market experience, but that these depend on continued progression through the school system. The earlier children drop out of school and enter the labor force the greater the penalty they pay in terms of adult earning capacity. Those who never go to school and only work accumulate the least education and marketable experience. Those who complete high school tend to have higher accumulated human capital and greater earning capacity.

The results also indicate strong gender disparities. At every level of schooling and early employment, girls pay a greater penalty than boys for not continuing in school or for working while in school. One of the hypotheses put forward as to why this is so relates to the "nature" of the work boys and girls do. The types of early employment that boys engage in (industrial, services, etc.) may be more complementary to the occupations they choose later in life. Thus, early work experience counts as real experience. Further, their work may be more complementary to remaining in school for longer periods. Girls, however, tend to be concentrated in activities in which there is little accumulated experience and low complementarity with education (domestic work). Thus, the returns to their "experience" are low because the "experience" they gain early in life does not count in the labor market, or it is in the type of occupations where education is not rewarded.

The findings have important policy implications. In Mexico and in the rest of Latin America, school enrollment of girls is on a par with or sometimes greater than that of school enrollment of boys. Still, despite a reduction in differences in educational attainment among boys and girls, gender disparities in labor market outcomes are persistent. Our results suggest one piece of information relevant to explaining gender differences in adult labor market outcomes. The male–female wage differences later in life may be partly explained by differences in the types of employment that men and women undertake when they are young. For the same number of years of early work and school dropout, girls suffer more in

terms of labor market returns later in life than do boys. Policymakers who are interested in the "efficiency" of educational investments may gain from taking a closer look at the gender-differentiated effects of early employment and dropout on labor market returns in Mexico.

This chapter provides a brief overview of the literature and of the data, summarizes the theoretical framework and the models used in the chapter, examines the results of earnings equations that model early entry into the labor force and school dropout, and summarizes the major points of relevance to policy decisions and highlights directions for future research. The Appendix considers the implications of excluding home-based household work in the definition of child labor.

Literature Review

Studies on developing countries tend to focus on the relationship between school and work during the school-going age, with the objective of testing whether work hinders schooling.[1] However, there has been relatively little empirical work evaluating the effects of work during school-going age on labor market returns in later years.

Several studies from developing countries on the relationship between school and work during the school-age period provide important insights for this chapter. A common finding is that a large proportion of working children attend school (Post and Pong 2000; Patrinos and Psacharopoulos 1993; Levison 1991; Knaul 1993, 1995). A volume of studies (Grootaert and Patrinos 1999) considering the determinants of child labor, home care work, and schooling suggests that among poor families, interventions to allow for the combination of school and work may provide interim solutions to prevent school dropout associated with child labor. Alessie, Baker, and Blundell (1992) show that in Côte d'Ivoire there are important differences in the impact of various socioeconomic and labor market variables on the probability that children work, depending on whether the child worked and attended school in the initial period. Knaul (1995) develops models similar to those used in this chapter and finds that in Colombia there is a payoff to delayed entry into the labor force, and a tradeoff between work and schooling. The return to a year of education or experience is reduced when schooling is combined with work, and only partially offset by the return to experience.

The empirical literature evaluating the impact of early labor market experience among adolescents in developed countries is of particular relevance to this study. This research is mixed in its findings on the tradeoffs between school and work, and the long-run impact on adult earning capacity (Rich 1993). On one hand, there are a number of studies that suggest that teenage workers have lower grade point averages and weaker

career and educational attainment. Post and Pong (1999, 2000) present evidence from a range of both developed and developing countries demonstrating a negative relationship between employment and educational achievement among 13 and 14 year olds. On the other hand, not all the evidence on the effects of youth work on long-term returns to education and experience is negative. Several studies from the United States have shown that individuals who were employed during high school tend to have more stable employment records and higher earnings as adults. Others have found that working during high school is associated with punctuality, dependability, and personal responsibility (Steinberg, Laurence, Greenberger, Garduque, Ruggiero, and Vaux 1982; Steinberg, Laurence, Greenberger, Garduque, and McAuliffe 1982). Job switching during high school and short periods of unemployment are associated with higher average wages for adults up to 10 years later (Becker and Hills 1983). The impact of early labor force participation may be related to factors such as the intensity of the work and age of the child (Post and Pong 1999).

There has been some quantitative research on child and youth labor force participation in Mexico. Several researchers have documented that families have responded to economic crises and to unemployment of the family head by sending children and women to the labor market (González de la Rocha 1988, 1995; Beneria 1992; Chant 1994). There are also several studies that have considered child labor in particular occupations, industries, and sectors, including the street or informal sector (Cos Montiel 2000; Brizzio 1996). Christenson and Juarez (1987) find that the education level of parents, family income, family size, and female headship increase the likelihood of child labor.

A few studies have considered the impact of child labor on schooling. Using the National Household Income and Expenditure Survey of 1992, Abler, Rodríguez, and Robles (1998) show that female youth who work in their home have lower school attendance rates than other groups of young workers. Binder and Scrogin (1999) use data collected through direct interviews with children in Guadalajara, Arandas, and Tijuana to consider the determinants of labor force and household work. They find that the occupation of the household head is an important determinant of hours worked. Labor force hours tend to reduce leisure time, although the effect on academic performance and desired schooling is negligible. Knaul and Parker (1998) use retrospective data to analyze the long-term relationship between school dropout and labor market entry. Workers are more likely to be behind in school, and hours spent studying are lower among children who work longer hours. Their analysis suggests that both labor market entry and school dropout are associated with negative shocks to household income and to the reorganization of families, such as

divorce. Levison, Moe, and Knaul (2000) estimate the determinants of studying and working for youths aged 12 to 17 in urban Mexico using the national employment survey. This research contrasts a definition of work that includes household domestic work, with the traditional definition of market-based employment, which excludes household domestic work. Results based on the traditional definition indicate that girls are more likely than boys to specialize in school, while those based on the more inclusive measure of work indicate that girls are less likely than boys to specialize in school.

Very few studies have been undertaken on particular policy interventions or programs on behalf of child workers or to increase school attendance. Almost no studies have considered the demand side or the role and responsibilities of employers, both of which are important areas for future investigation. Gómez de León et al. (2000) cite evidence of an important impact of monetary educational grants provided through the *Programa de Educación, Salud y Alimentación* (Education, Health and Nutrition Program, PROGRESA) on promoting school attendance and decreasing child work. The reduction in labor force participation is more evident among boys than girls, which is likely to be associated with the low rates of paid work among females. This finding suggests the importance of analyzing the role of unpaid labor among females.

Other literature of direct relevance to this chapter considers the measurement of education and experience in the analysis of returns to human capital. Lam and Levison (1992) find that the definition of the experience variable may have important effects on the variance in earnings for groups with low levels of experience. A series of studies evaluates the returns to the quality and quantity of schooling in Brazil, and finds that the results are highly sensitive to accounting for early entry into the labor force in the experience measure (Behrman and Birdsall 1983, 1985; Eaton 1985). Behrman and Birdsall (1985) note, "...the standard definition of experience should not go unquestioned in settings where many children leave school well before the age of 15, but may or may not immediately begin full time work."

Data

The data used here come from the *Encuesta Nacional de Empleo* (National Employment Survey—ENE), and in particular from the associated module called the *Encuesta Nacional de Educación, Capacitación y Empleo* (National Survey of Education, Training and Employment—ENECE). The data were collected in the second trimester of 1995 by the *Instituto Nacional de Estadística, Geografía e Informática* (INEGI) and the *Secretaría del Trabajo y Previsión Social*.

The ENE and ENECE cover both the urban and rural areas of Mexico and include approximately 110,000 individuals. The samples are divided into urbanized and less urbanized areas. Urbanized areas include the major urban centers with 100,000 or more inhabitants and state capitals. The less urbanized areas are comprised of low-density urban centers of 2,500 to 99,999 inhabitants and rural areas. The unfortunate consequence of these groupings is that the results presented in this chapter are not easily divided into rural and urban areas, given that the low-density urban centers are quite large. For this reason, the majority of the results are given only at the national level, with a dummy variable to indicate differences between the urbanized and less urbanized areas.

The ENE includes information on educational attainment, demographic characteristics, and family structure for all household residents. The survey also contains a household module with information on physical characteristics and ownership of the dwelling. The main body of the questionnaire is devoted to a standardized battery of questions on employment, unemployment, and labor market withdrawal applied to all household residents aged 12 and over. This part of the survey also includes information on time spent on household work, market work, and studying.

The ENECE includes detailed information on education and labor market histories based on retrospective questions on the age at which individuals took their first job and the age at which they left school. The information on age at first entry unfortunately does not specify what is considered as "entry" or a "first job" either in terms of hours worked or duration of the work. There are no specific instructions in the interviewer's manual. The data also include a variety of questions related to labor market experience. In addition to the standard variables (age and years of schooling) used to construct potential or traditional experience measures, there is information on the total number of months worked during the individual's lifetime.

The Empirical Framework: Modeling the Effects of Early Labor Force Entry and School Dropout

The human capital model provides a framework for examining the effect of early entry into the labor force, and the tradeoff between working and attending school. Individuals invest in themselves through education and training that lead to increases in future earnings and nonmonetary benefits. This investment is associated with both direct costs and time costs that arise due to the deferral of earnings and the possible reduction of a person's working life (Mincer 1974; Becker 1993).

The human capital earnings function described in Mincer (1974) differentiates between schooling and "post"-schooling investments that

may be referred to as training or on-the-job experience. The basic earnings function includes the amount of completed schooling and work experience.

This equation is estimated empirically as a log linear function, a basic formulation commonly used in the literature. A quadratic term for years of experience incorporates diminishing returns in terms of the training that is received through labor market experience. The basic equation is:

$$Log\ Y_i = \beta_0 + \beta_1 s_i + \beta_2 e_i + \beta_3 e_i^2 + X'\beta + \mu_i \qquad (1)$$

where, for each individual i, log Y is the natural logarithm of earnings or wages at time t, e represents years of work experience, s is years of schooling, and X is a matrix of control variables that may include personal, family background, and labor market characteristics. The error term is represented by μ.

In the absence of more detailed information on training and time actually spent in the labor force, potential time spent in the labor market is used as a proxy. In most of the literature, potential experience is defined as "age minus years of completed schooling minus the age at beginning to attend school" (often age minus highest completed grade 6). This traditionally used measure of potential experience presents several limitations for the study of child labor and schooling, while modifications of the experience and education measures make it possible to incorporate early work experience and the interactions with schooling.

The limitations of the traditional measures are related to the timing and interactions between work and school. First, years of schooling is typically not available and number of grades successfully completed is used as a proxy. This leads to an overestimation of the number of years of out-of-school experience when grade repetition is frequent. Second, children start school at different ages and the age is often not reported. Third, labor market attachment is not necessarily continuous. Part-time work, temporary employment, and unemployment are prevalent. Finally, and key to the analysis presented in this chapter, in-school work is common in both developing and developed economies. These phenomena are likely to differ significantly by gender.

In this chapter, the earnings equation is specified in such a way as to allow for differences between early and late labor market experience, between in-school and out-of-school work, and the interaction of school and work at different stages of schooling. The summary statistics (means and standard deviations) of the dependent and independent variables are given in Table 2.1 and a discussion of these variables follows.

(Text continues on page 58.)

Table 2.1 Means and Standard Deviations of Dependent and Independent Variables

	All						*Positive Wage Earners*					
	Male		*Female*		*All*		*Male*		*Female*		*All*	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Dependent variable												
Hourly wages and earnings							9.71	25.46	8.41	11.00	9.26	21.59
Nat. logarithm of hourly wages and earnings							1.83	0.86	1.76	0.82	1.80	0.85
Independent variables												
Human capital variables												
Education:												
Years of education	9.01	4.95	8.19	4.65	8.58	4.81	8.95	4.97	9.36	4.82	9.09	4.92
Education categories:[1]												
Some or completed primary school	0.35	0.48	0.38	0.48	0.36	0.48	0.37	0.48	0.30	0.46	0.34	0.47
Some or completed jr. high school	0.23	0.42	0.20	0.40	0.22	0.41	0.24	0.43	0.20	0.40	0.23	0.42
Some or completed high school	0.18	0.38	0.22	0.42	0.20	0.40	0.17	0.37	0.27	0.44	0.20	0.40

(Table continues on the following page.)

Table 2.1 *(continued)*

	All						Positive Wage Earners					
	Male		Female		All		Male		Female		All	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Some or completed college-level degree	0.21	0.40	0.14	0.34	0.17	0.37	0.20	0.40	0.19	0.39	0.19	0.40
Experience:												
Potential (traditional): (age – years of education – 5)												
Linear	19.57	13.24	20.70	13.57	20.16	13.43	20.43	12.55	18.60	12.44	19.79	12.54
Squared	558.29	645.46	612.51	671.67	586.76	659.91	574.57	623.93	500.75	585.26	549.04	611.84
Total years worked during life:												
Linear	17.68	12.72	8.42	9.99	12.82	12.28	18.89	11.96	12.75	10.48	16.76	11.84
Squared	474.46	553.21	170.68	337.42	314.90	477.61	499.82	542.70	272.24	396.41	421.13	508.66
Years that combined studies and work	1.79	3.01	0.80	2.01	1.27	2.58	1.84	3.05	1.08	2.39	1.58	2.86
Combinations of work and study by categories												
Combined work and primary school, then dropped out	0.13	0.33	0.05	0.23	0.09	0.29	0.13	0.34	0.06	0.23	0.11	0.31
Combined work with primary school, then passed to jr. high school	0.03	0.18	0.01	0.10	0.02	0.14	0.04	0.19	0.01	0.10	0.03	0.16
Combined work												

and jr. high school, then dropped out	0.06	0.23	0.03	0.17	0.04	0.20	0.06	0.24	0.03	0.17	0.05	0.22
Combined work with jr. high school, then passed to high school	0.02	0.15	0.01	0.12	0.02	0.13	0.02	0.15	0.02	0.13	0.02	0.15
Combined work and high school	0.06	0.23	0.07	0.25	0.06	0.24	0.06	0.24	0.09	0.28	0.07	0.26
Labor force participation variables												
Dummy rural–urban (rural = 1)	0.17	0.38	0.17	0.37	0.17	0.38	0.16	0.37	0.11	0.32	0.15	0.35
Home ownership: [2]												
Owns home or has it												
Mortgaged	0.78	0.41	0.78	0.41	0.78	0.41	0.76	0.43	0.78	0.42	0.77	0.42
Lent without paying rent or other arrangement	0.15	0.35	0.14	0.35	0.14	0.35	0.16	0.37	0.15	0.36	0.16	0.36
Overcrowding												
Number of rooms per resident	1.19	0.73	1.20	0.72	1.20	0.73	1.18	0.73	1.28	0.78	1.22	0.75
Number of bedrooms per resident	0.48	0.31	0.48	0.31	0.48	0.31	0.46	0.31	0.52	0.34	0.48	0.32

(Table continues on the following page.)

Table 2.1 *(continued)*

	All						Positive Wage Earners					
	Male		Female		All		Male		Female		All	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Home charateristics												
Predominant building material: [3]												
Wood	0.07	0.25	0.06	0.24	0.07	0.25	0.07	0.26	0.06	0.24	0.07	0.25
Adobe (mud brick)	0.07	0.25	0.07	0.25	0.07	0.25	0.06	0.25	0.05	0.22	0.06	0.24
Asbestos or metallic sheathing	0.00	0.06	0.00	0.06	0.00	0.06	0.00	0.06	0.00	0.05	0.00	0.06
Paper board sheathing	0.00	0.06	0.00	0.06	0.00	0.06	0.00	0.07	0.00	0.06	0.00	0.06
Other building material	0.01	0.07	0.00	0.07	0.00	0.07	0.01	0.07	0.00	0.06	0.00	0.07
Roofing material: [4]												
Palm fronds or wood	0.10	0.29	0.09	0.28	0.09	0.29	0.10	0.30	0.08	0.28	0.10	0.29
Asbestos or metallic sheathing	0.12	0.32	0.12	0.32	0.12	0.32	0.12	0.33	0.10	0.30	0.11	0.32
Paper board sheathing	0.04	0.19	0.04	0.19	0.04	0.19	0.04	0.19	0.03	0.17	0.04	0.19
Other building												

material	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.10	0.01	0.11
Flooring material: [5]												
Wood, tiles or other covering material	0.50	0.50	0.53	0.50	0.52	0.50	0.49	0.50	0.57	0.50	0.52	0.50
Earthen floors	0.06	0.24	0.06	0.23	0.06	0.23	0.06	0.24	0.04	0.19	0.05	0.22
Does not have												
Interior bathroom	0.06	0.23	0.05	0.22	0.05	0.22	0.05	0.23	0.03	0.17	0.05	0.21
Electricity	0.02	0.15	0.02	0.14	0.02	0.15	0.02	0.15	0.01	0.11	0.02	0.14
Interior sewage connection	0.14	0.35	0.14	0.34	0.14	0.35	0.14	0.35	0.09	0.29	0.12	0.33
Telephone service	0.60	0.49	0.58	0.49	0.59	0.49	0.63	0.48	0.53	0.50	0.59	0.49
Sample size	37,288		41,250		78,538		26,921		14,229		41,150	

1. The excluded category was zero years of education.
2. The excluded category was renting home.
3. The excluded category was built of brick, concrete, Stone.
4. The excluded category was concrete or brick roofing material.
5. The excluded category was plain concrete flooring (no covering material).

Discussion of Variables

The wage functions are estimated using a direct measure of time spent working during the individual's life. The information on "total years worked during lifetime" is from the survey question that explicitly asks about the total number of months that the respondent has worked during his or her lifetime. This variable is likely to suffer from recall error, yet have important advantages over the potential measure of experience.[2] The direct formulation of the experience measure includes part-time and in-school work undertaken at any time of the life cycle, and excludes labor market absences, be they of short or long duration. Finally, it also accounts for late entry into the labor force, which is particularly common among women. The data show that the differences in the experience measures are large for females. For both males and females, the measure of "potential" experience (age minus highest school grade completed minus age at entering schooling) is higher than the measure from total time spent working during the lifetime. The traditional measure gives a mean of 21 years of work experience on average, compared to 8 years using the direct measure of total years worked during lifetime.

In-school work experience is modeled in two ways. First, a linear term is added for potential in-school experience below age 18. This is defined as the difference between the age at entry into the labor force and the age at school dropout. The coefficient on this term is expected to be negative because the young person is unlikely to spend as much time in school or at work as on either activity if undertaken individually. This negative coefficient must be deducted from the returns to education and experience in order to develop a measure of the net returns to a year of time in which school and work are combined. Thus, the negative coefficient cannot be interpreted as a negative return to in-school work, but rather compared to the other returns.

For the second model, education is given as a step function with a dummy variable for primary, junior high school, high school, and university education. Five interaction terms are also added to indicate individuals who (a) combined work and primary school, and then dropped out of school during or after primary; (b) combined work and primary school, and continued on to junior high school; (c) worked during junior high school and went on to high school; (d) worked during junior high and then dropped out of school; and (e) combined work with time spent studying in high school. The inclusion of these five interaction dummy variables provides a complete way of differentiating between combinations of work and school at different levels of the educational cycle, and dropping out of school at different points in the cycle. The underlying assumption of this approach is that once a child enters the

labor force he or she continues to work at all later phases of the educational cycle.

The dependent variable in all of the regression analysis is the logarithm of total hourly earnings. Earnings include wages and income of all workers, be they salaried or independent. The variable exclusively reflects monetary earnings from the primary job, because in-kind and secondary salaries are not reported.[3] Hours are based on the week prior to the survey. In order to estimate gender differences, each regression is estimated separately for males and females. The regressions all include a dummy variable to indicate whether the person is living in one of the large urban areas or in the less-urbanized parts of the country. The sample is restricted to adults between ages 18 and 59.

Caveats Regarding Econometric Analysis

A series of caveats regarding the econometric analysis is in order. First, the model does not account for unpaid work in one's family home. Home-based housework is an activity that absorbs the majority of the time of many female children and adolescents, that is incompatible with schooling under some circumstances, and that may make it difficult to reenter the labor force (Knaul 1999). The exclusion of unpaid housework biases the analysis in this chapter, particularly with respect to females.[4] Since retrospective information on hours spent on housework is not available in the data, it is difficult to speculate about the sign of the bias. Still, it is likely that if unpaid, home-based housework were to be incorporated into the model as a form of child labor, it would also show a penalty in terms of educational and future employment opportunities that would be much more articulated among females. It is important to note that the sample selection correction, discussed below, will help to adjust for the effects of having a large proportion of adult women out of the labor force.

Second, the age at entry into the labor force and educational attainment are endogenous variables. Given the limitations of data used herein, it is not possible to account for the endogeneity of these two variables. Therefore the empirical analysis proceeds as if both variables were exogenous.

Self-Selection

Self-selection may also be a problem for the analysis presented in this chapter. It may be that the only children who begin working at an early age are those who come from households in extreme hardship, are from "abusive" families, or do not succeed at school for reasons such as hav-

ing an inadequate diet. Further, it is impossible, based on available data, to know what the effect of working as a child would have been on the people who did not undertake these activities, or what the adult wage would have been for the working children if they had not worked. As a partial test of these issues, the regressions were expanded by including controls for state of birth as a measure of individual heterogeneity and demand conditions; physical characteristics of the dwelling as indicators of family wealth and poverty; occupational choice; and municipality-level[5] fixed effects, such as the local labor market demand. The findings presented below are generally robust to these re-estimations. Neither the findings regarding the tradeoffs between returns to education and early work experience, nor the gender differentials, are likely to be driven by individual heterogeneity or variability in labor demand, nor solely by a correlation between child labor and poverty in the family.

The summary statistics (means and standard deviations) of the dependent and independent variables are given in Table 2.1. Summary statistics reveal that self-selection bias could be a potentially important problem with both the wage and earnings equations, especially for women. Among males, approximately 72 percent are economically active and earning a positive wage, while for females the figure is 34 percent. To correct for selectivity bias, the regressions models are run using the Heckman selection correction model (Heckman 1979).[6] Given the instability of sample selection models (Mroz 1987; Falaris 1995), and the fact that the data used for the analysis do not include more appropriate identification variables such as unearned income, the regressions were also run using simple least squares regressions. Only the results using the sample selection corrected models are presented in the chapter, given that the Heckman equations indicate there is a significant sample selection bias for both males and females in all of the regressions. The conclusions presented in this chapter hold, using either the sample correction version or the ordinary least squares regressions. The tables include only the regression coefficients for the wage functions.[7]

Descriptive Findings: Early Labor Force Entry and School Dropout

The retrospective pattern of age at entry into the labor force among adult Mexicans that have ever worked suggests that a large proportion began to work at an early age (Table 2.2). Thirty percent of males and 15.6 percent of females first worked by age 11. It is also important to note that a large group of women began to work as adults. Approximately 24 percent of females who have ever worked entered the labor force after age 20, compared to 11 percent of males.

Table 2.2 Age First Worked, by Gender (%) (adults aged 18 to 59)

Age first worked	*Male*	*Female*	*All*
Less than 4	0.3	0.1	0.2
5 to 8	9.8	4.8	7.5
9 to 11	20.1	10.9	16.0
12 to 14	24.4	18.5	21.7
15 to 17	24.9	27.3	26.0
18 to 19	9.9	14.9	12.2
20 to 24	8.6	14.6	11.3
25 to 29	1.6	4.1	2.7
30 to 34	0.3	2.0	1.1
35 to 39	0.1	1.3	0.7
40 or more	0.1	1.5	0.7
Total %	100	100	100
n	35,425	31,371	66,796

Source: ENECE, 1995.

Furthermore, 31 percent of women report never having worked, compared to only 3.6 percent of males.

The trends in age at entry into the labor force suggest important changes over time and by cohort. Consistent with patterns that have been observed in other Latin American countries and in the developed world, market-based child labor in Mexico has shown a tendency to decline over time. While 55.5 percent of males over age 60 began work before age 11, the figure is only 40.8 percent among males age 40 to 59, and 24.1 percent among males age 18 to 39. For women, the rates are substantially lower, but the trends are the similar. The figures are 19.0 percent, 15.3 percent, and 9.6 percent, respectively.

Among adults who began working between ages 5 and 15, the distribution of occupations is quite narrow and differentiated by gender. Using the four-digit occupation codes, it is possible to distinguish the most commonly held occupations. Agriculture is the predominant activity—21 percent of females and 51 percent of males worked in this sector. For women, 6 percent began work in a factory manufacturing textiles or foodstuffs, 10 percent worked in commerce, and 33 percent worked in domestic service. Among males, 6 percent worked in factory jobs including woodwork and machinery manufacture, 7 percent worked in construction, and 5 percent worked in commerce. Occupational mobility appears to be more limited in agriculture than in other occupations. For males, 55 percent of those who began work in agriculture declare agriculture as their current occupation. The figure is 39 percent for factory work, and 27 percent for com-

merce. For females, the figure is 38 percent in agriculture, 14 percent in factory work, and 17 percent in domestic service. On the other hand, for females one of the most common paths after working as a youngster is to exit the labor force. Over 50 percent of women who began work as children are not working in market activities as adults. By comparison, only 37 percent of women who began working after age 15 are out of the labor force. For males, the proportion out of the labor force is less than 5 percent and is similar among the group that began to work before or after age 15.

The distribution of the age at school dropout shows that a large proportion of adults left school at an early age. By age 11, 27 percent had abandoned the school system, compared to 58 percent by age 14 (Table 2.3). The proportion of children who drop out of school is slightly higher among females. Further, and as in the case of age at entry into the labor force, important changes in age at school dropout are evident over time. According to retrospective data, the age at dropping out of school has increased steadily and substantially among both females and males. While almost 55 percent of adult males over age 60 report having dropped out of school before age 11, this is the case for only 15 percent of those aged 18 to 39. For females the figures are 54 percent and 18 percent, respectively. Early school dropout appears to have been, and continues to be, more common in rural areas.

There is a strong correlation between age at entry into the labor force and age at school dropout among Mexican adults (Table 2.4). Still, in-school work was quite common among this sample of adults, particularly at the primary school level. This is evident from the pattern of age at school dropout compared to age at entering the labor force. The age at school dropout rises steadily with the age of first work for all males and for females who began work before age 25. Average age at school dropout exceeds age at entry into the labor force for those who began to work before age 12.[8]

Empirical Findings: The Effects of Combining School and Work

The estimates of the effects of combining school and work on returns later in life using the continuous measure of in-school work are presented in Table 2.5. For both males and females, the coefficient of years of in-school work experience on returns is negative and significant in both the least squares and the selection corrected regressions. For males the coefficient is –2.4 percent, while for females it is –2.7 percent, using the selection corrected equations. These results show that there is a "penalty" for doing work at the primary or secondary levels. This can be explained as a trade-

Table 2.3 Age at School Dropout of School, by Gender (%) (adults aged 18 to 59)

Age at dropout	*Male*	*Female*	*All*
Less than 4	0.3	0.4	0.4
5 to 8	5.8	6.2	6.0
9 to 11	19.4	22.0	20.7
12 to 14	30.6	31.0	30.8
15 to 17	21.7	20.6	21.2
18 to 19	7.4	8.8	8.1
20 to 24	10.2	8.0	9.1
25 or more	4.7	3.0	3.9
Total %	100	100	100
Sample size	38,106	41,677	79,783

Source: ENECE, 1995.

Table 2.4 Age at School Dropout by Age First Worked and Gender
(adults aged 18 to 59)

	Age at dropout					
Age first	*Male*			*Female*		
worked	*Mean*	*Median*	*Std. dev.*	*Mean*	*Median*	*Std. dev.*
5 – 8	13.3	12	6.1	12.2	11	6.2
9 – 11	12.9	11	5.1	12.1	11	4.7
12 – 14	13.8	13	4.5	13.0	12	4.3
15 – 17	15.6	15	4.3	15.2	15	4.2
18 – 19	17.4	18	4.5	16.9	17	4.2
20 – 24	20.6	21	4.5	18.1	19	4.9
25 – 29	23.7	25	4.9	17.4	15	6.5
30 – 34	25.5	28	8.0	14.9	13	6.9
35 – 39	27.1	33	10.5	14.3	13	6.5
40 or more	29.1	32	13.4	12.8	11	6.9

Source: ENECE, 1995.

off between specializing in schooling as a full-time activity versus combining school and work, which is likely to imply devoting less time to education. Thus, there are positive returns to both schooling and work, but these are less than the returns to specializing in either activity and less than the returns to working after completing school.

Table 2.5. Returns to Human Capital: Combinations of Work and Schooling, by Gender (using Heckman Sample Selection Correction)

Dependent variable: hourly wages or earnings

Measures of experience and combination of work and school	*Males*		*Females*	
	Total years worked during life	*Total years worked and work and studies*	*Total years worked during life*	*Total years worked and work and studies*
Independent variables				
Total years worked during life:				
Linear	0.0577	0.0601	0.0889	0.0952
	(18.27)	(19.10)	(12.67)	(13.23)
Squared	–0.0010	–0.0010	–0.0016	–0.0017
	(14.63)	(15.15)	(12.00)	(12.51)
Years of education	0.0869	0.0923	0.1107	0.1158
	(82.61)	(83.20)	(30.90)	(30.56)
Years combining education and work	–0.0236			–0.0273
	(13.99)			(7.98)
Dummy rural–urban area	–0.3448	–0.3279	–0.2691	–0.2660
	(23.76)	(22.88)	(12.45)	(12.27)
Constant	0.2696	0.2367	–0.5302	–0.6418
	(5.11)	(4.51)	(3.21)	(3.86)
Inverse mills ratio	0.5240	0.5056	0.6625	0.7100
	(8.46)	(8.30)	(7.25)	(7.80)
Adjusted R^2	0.2938	0.2985	0.3022	0.3043
F Statistic	2240.91	1910.55	1233.11	1037.96
Sample size	37,288	37,288	41,250	41,250

Note: The correction uses full-information maximum-likelihood, and the standard errors are White, heterocedasticity corrected using LIMDEP.

Source: ENE and ENECE, 1995.

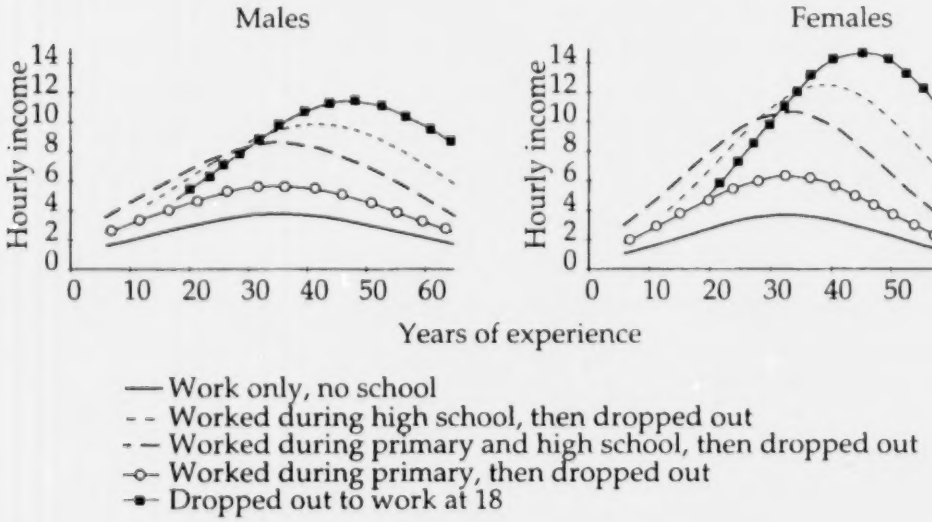
The returns to each schoolwork combination differ. One way of summarizing these patterns is through time-use earnings profiles. Such profiles are presented for males and females in Figure 2.1. The results are presented for six possible combinations of school and work separately. The first profile refers to a person who did not attend school and worked from age 5. The next three profiles refer to combinations of schooling, in-school, and out-of-school experience. In each case it is necessary to assign

a somewhat arbitrary adult-experience equivalent, which in these profiles is the same as a full year of experience. The second line refers to a person who completed high school (12 years of education), worked during the last 6 years of school, and then dropped out and entered the labor force. The third profile corresponds to a person who has 12 years of education, worked through their entire school career, and gained 12 years of work experience. The next line describes a person who combined school and work during primary school, then dropped out of school. The last line considers the case of a person who completed primary and high school and then dropped out to work.[9]

The most striking result is that additional schooling quickly outweighs any benefits to dropping out of school. The profiles for the people who never went to school, or who dropped out of school early, are below the profiles for those who remained in school.

There is also an important gender dimension to the findings. The female profiles differ substantially from the male profiles and reflect the high returns to postprimary education for females, which are in turn key to explaining low gender wage gaps in Mexico (Parker 1998). Again, these results are likely to be very sensitive to the use of the sample selection procedure.

Figure 2.1 Time Earnings Profiles: Varying the Investment of Time between School and Work Using Sample Correction, Adults Ages 18 to 59 (corresponds to Table 2.5)



Note: Years of experience is equal to (age minus 5).
Sources: ENE and ENECE, 1995.

The next set of regressions model the fact that the combination of work and school may have different effects depending on the stage of schooling, the probability of proceeding to a higher level, and the type of work that is undertaken (Table 2.6). For example, the costs of combining primary school with work may be higher because of the age of the child. Yet, higher levels of schooling may be more challenging and leave less time for the additional pressures of working.

Table 2.6. Returns to Human Capital: Combinations of Work and Schooling by Level and by Gender, Ages 18 to 59 (using Heckman Sample Selection Correction)

Dependent variable: hourly wages or earnings

Measures of experience and combination of work and school by level	*Males Total years worked, and work and studies by level (model 5)*	*Females Total years worked, and work and studies by level (model 5)*
Independent variables		
Total years worked during life:		
Linear	0.0634	0.1009
	(18.79)	(13.02)
Squared	-0.0011	-0.0019
	(16.13)	(12.70)
Education categories:		
Some or completed primary school	0.4451	0.4109
	(15.04)	(9.74)
Some or completed jr. high school	0.7025	0.7953
	(21.52)	(14.09)
Some or completed high school	0.8441	1.2205
	(25.62)	(19.91)
Some or completed college-level degree	1.4466	1.7560
	(47.47)	(25.40)
Combination of work–study by categories:		
Combined work and primary, then dropped out	-0.0988	-0.2666
	(5.75)	(7.63)
Combined work with primary, went to jr. high school	-0.2561	-0.4159
	(8.61)	(5.86)
Combined work and jr. high, then dropped out	-0.0542	-0.2389
	(2.29)	(5.37)

Table 2.6 (continued)

Measures of experience and combination of work and school by level	*Males Total years worked, and work and studies by level (model 5)*	*Females Total years worked, and work and studies by level (model 5)*
Combined work and jr. high, then went to high school	-0.0904 (2.52)	-0.4416 (7.48)
Combined work and high school	0.0521 (1.86)	-0.1170 (4.14)
Dummy rural–urban area	0.0004 (25.80)	0.0003 (13.39)
Constant	0.2706 (4.01)	-0.5459 (2.99)
Inverse mills ratio	0.5838 (8.65)	0.7416 (7.71)
Adjusted R^2	0.2800	0.2600
F Statistic	806.23	455.00
Sample size	37,288	41,250

Note: The correction uses full-information maximum-likelihood and the standard errors are White, heterocedasticity corrected using LIMDEP.

Source: ENE and ENECE, 1995.

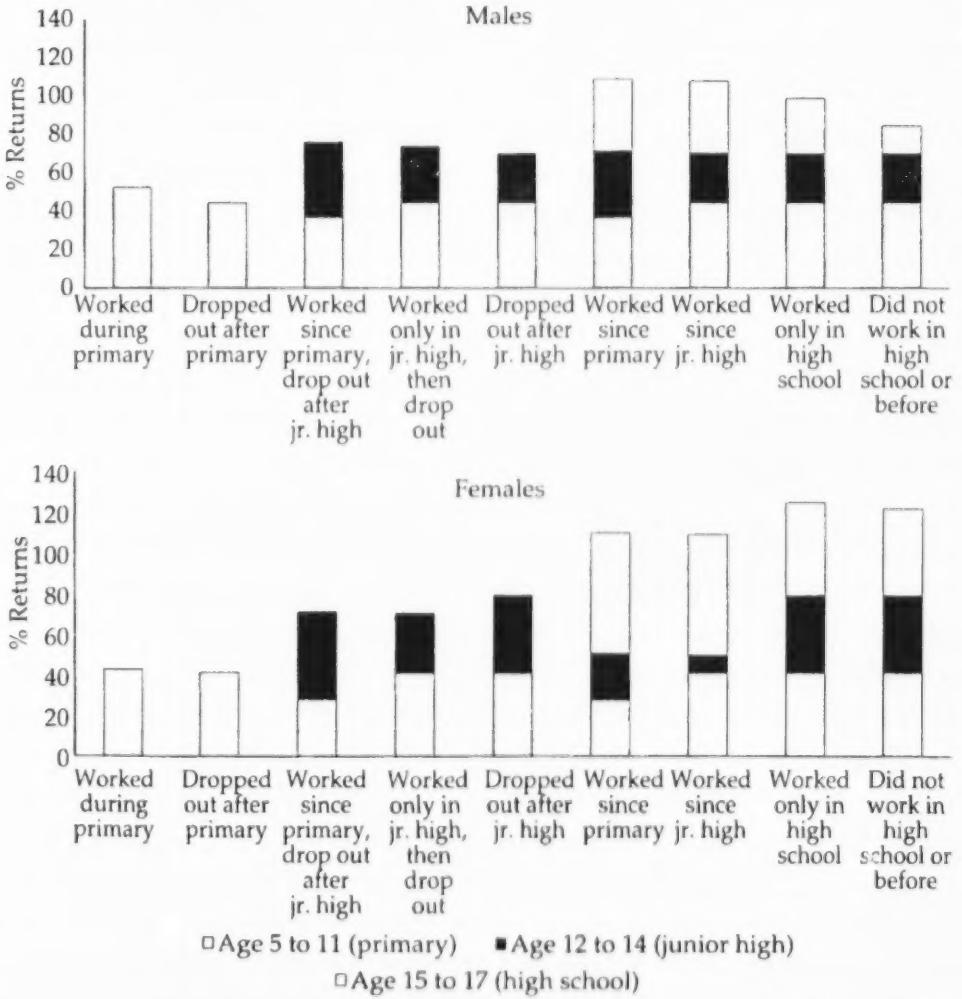
The five interaction terms in these regressions that refer to the stage at which work was combined with school were enumerated in the section on the empirical framework. The signs on these coefficients are all negative and significant, except the coefficient on working only during high school for males.

The gender dimensions of these results are also revealing. The returns to postprimary education are higher for women than for men. Further, the coefficients on the interaction terms are much larger for females, even at the level of high school, suggesting that there are important gender differences in the implications of combining school and work. Specifically, the penalties to combining work and school are more severe for females, and returns to early work experience are too low to offset the substantial losses associated with reducing the educational career. The spread in the returns to education may also be a reflection of the types of jobs that are available to women with no education or only primary schooling.

The returns to experience and the returns to education at each level are summarized in Figure 2.2. To calculate the returns to the allocation of time

across school and work at each level of schooling, overall returns to experience are added to the returns to education and in-school work. This provides an estimate of the net return to the investment of time when school and work are combined. To do the calculation, it is necessary to make assumptions about the adult equivalent of part-time experience. Children who begin work between ages 5 and 11 are thus assumed to have worked half of the period, or on average 3 years. Those who start work during primary school and continue on to junior high school and high school are assumed to gather the equivalent of 9 years of full-time labor market experience. Those who worked during junior high and high school worked for 4.5 years. Finally, individuals who began work during high school are assumed to have 1.5 years of full-time equivalent experience.

Figure 2.2 Combinations of Education and Work By Level of Education, Ages 18 to 58 (corresponds to Table 2.6)



The profiles are given separately for males and females. The height of each bar corresponds to the returns to the allocation of time across school and work at each level of schooling. Starting from the left-hand side, the first two bars correspond to the primary level of schooling, the next three to junior high school, and the last four to high school. The last bar, which may be taken as a point of reference, corresponds to the case of a youth who has at least some high school education and did not work at any time during his or her educational career.[10]

The first result to note from the figures is that, consistent with the findings discussed above, dropping out of school to work never provides a higher return than continuing in school. Further, the profiles for females are slightly higher than for males, presumably reflecting the high returns to upper levels of education. The gender dimension of the results is that dropping out involves a greater penalty for girls than for boys. This could reflect several factors, including the greater likelihood of being out of the labor force, the poor job opportunities available to women with little education, and an association with early childbearing.

Another key finding is that for women, the penalties for combining school and work or for dropping out of school are not compensated by the returns to experience. For males the total returns to combining work and school may sometimes exceed those of devoting youth time exclusively to schooling. This suggests there may be a complementarity between the schooling and work undertaken by males. In contrast, for females the bars for combining work and schooling tend to be lower than those for specializing in school. This implies that while the net return to combining school and work is positive, it is lower than the return to concentrating on schooling.

Conclusion

This chapter evaluated how employment during childhood and adolescence and school dropout affect returns to human capital later in life. The availability of retrospective data about age at entry into the labor force and of school dropout makes it possible to pursue this analysis.

The main econometric results of the chapter suggest that there are positive returns to early labor market experience, but that they depend on continued progression through the school system. The penalty to shortening the educational career substantially outweighs the returns to early experience. In addition, while there is a positive net return to in-school work, it is often lower than the return to specializing in schooling.

There are important gender dimensions to the results. For women, the returns to experience are lower, the returns to postprimary education are higher, and the penalties for dropping out of school and for combining

school and work are more severe. While there is evidence of complementarity between youth work and education among males, for females the returns to working only or to combining work and school tend to be lower than devoting time only to schooling.

A number of factors may contribute to explaining the high penalty to early work experience and school dropout for women compared to men. First, the type of jobs undertaken by women during school-age years may be particularly incompatible with combining school and work. Second, the returns to postprimary education are high relative to males and relative to the returns to primary education. Third, there could be low returns to accumulating experience in the types of work young women pursue during school years. Fourth, the skills that are attained by women who enter the labor market at an early age may not be transferable to other jobs, and young women who begin in these occupations may find it difficult to look for and be accepted in other types of work. Fifth, these gender differences could also reflect self-selection. It is possible that the women who begin to work at an early age are those who are less likely to do well in school. Finally, labor force exit is more common among women and could be associated with school dropout and early work experience. Other outcomes such as early childbearing could also be associated with early labor force participation and school dropout, compounding the impact on long-term educational and labor market success.

These alternate explanations require further research. Of particular interest would be further analysis of gender differentials in the occupational distribution of young workers, and in particular the impact of different types of work on educational and labor market outcomes through the life course. More detailed studies of particular occupations may also lead to increased information on the roles and responsibilities of employers. Within the range of occupations undertaken by girls and young women, one type of work that is common and deserves particular attention is domestic service. Available evidence on domestic service suggests that the women are often quite young, work long hours, and have few opportunities to attend school, and that they play an important role in explaining the differences in the returns to education and experience by gender (Knaul 1999; Flórez, Knaul, and Méndez 1995; Tenjo 1992, 1993). Further research is also required on domestic work undertaken by children in their own homes. This is often an activity that is more common among young women, that is likely to be incompatible with school attendance, and that offers only limited training for future paid work. Another area of work that requires further analysis is agricultural labor, much of which is undertaken by children without remuneration, and which is likely to interfere with school attendance.

The work of children and youth is very heterogeneous in terms of hours worked, job content, age at entering the labor force, and continuity between school and summer months. These differences have an important impact on the degree of compatibility with school attendance and progress in school, and in turn on future labor market outcomes. This implies that the negative effects of early labor force participation may not be evident from comparing workers to nonworkers, but rather rest on the unequal distribution of this work across children based on gender, poverty, and age.

Gender differentials in child labor are evident not only in the distribution of occupations, but also in the ways in which early labor market experience affects educational and future employment opportunities. Information on differentials in the nature of the work performed by girls and boys will be especially relevant to policies and programs that seek to improve educational attainment and reduce poverty. One of these is PROGRESA, the goals of which include maintaining children in school and targeting poverty at the family and community level. The gender differentials in child work also need to be incorporated into the process of developing national and international legislation in support of child workers.

Appendix 2.1

How Large Is the Bias in Child and Youth Employment Rates from Ignoring Housework?

This Appendix, a summary of Knaul (1999), draws attention to the need to take account of home-based work in addressing the issue of child labor, despite the fact that housework does not fall within a standard definition of employment. It is relevant to the knowledge regarding the undervaluation and undercounting of the work of women, and to the specific sphere of the activities of young people. Most estimates of labor force participation, including the ones in this chapter, fall short of accounting for unpaid housework activities. Traditional calculations of labor force participation tend to understate both the extent and the intensity of the work undertaken by young women. The existence of detailed data on time use from the ENE allows an assessment of the size of this bias.

Child and youth labor force participation are first evaluated using a traditional definition of employment—one that includes work undertaken inside or outside of the home, with or without remuneration, for at least one hour per week, in the production of marketable goods. Essentially, this definition excludes work undertaken in "nonmarket" activities, such as housework. The results under this definition are then contrasted to an inclusive definition. This approach adds domestic work undertaken in the child's own home to the traditional measure of child employment. The terms "home-based domestic work," "housework," "household work," and "household chores" are used to refer to this form of labor.[11]

Traditional definitions of labor force participation suggest that in all of Mexico, 12.6 percent of children aged 8 to 17 work in market activities (Table 2.A.1). Further, the incidence of work is more than twice as high for boys than for girls. Among all children and youth aged 8 to 17, 7.6 percent of girls compared to 16.8 percent of boys are employed in market-based work.[12]

Adding home-based work to traditional definitions of labor force participation generates an inclusive measure of child work. The results for children and youth aged 12 to 17 are presented in Table 2.A.2. Children and youth, in both the urbanized and less urbanized areas of Mexico, are commonly involved in household work when undertaken on a part-time basis. While a larger proportion of young women do housework, it is important to note that it is also a common activity among boys. As a result, the inclusive labor force participation rates are substantially higher than the rates based on market work. For females, the rates are approximately twice as high as the traditional labor force participation rates. For

Appendix Table 2.A.1 Employment Status among Children and Youth, Traditional Definition of Work that Excludes Domestic Labor in Own Home, by Age Group and Gender Proportion, (N)

All age group	*Male*	*Female*	*All*
8–11			
%	2.6	1.6	2.1
N	105,299	65,967	171,266
12–14			
%	13.1	5.8	9.4
N	403,895	185,398	589,293
15–17			
%	36.9	17.9	28.2
N	1,285,388	530,108	1,815,496
All			
%	16.8	7.6	12.6
N	1,794,582	781,473	2,576,055
Sample size	1,624	648	2,272

Notes: Figures calculated using expansion factors. N denotes the magnitude (population) estimated with expansion factors.
Source: ENPF, 1995.

15 to 17 year olds in urban areas, for example, the market-based participation rate is 20 percent, compared to 40 percent using a definition that includes home-based work undertaken 21 hours or more per week.

Time-use patterns are presented by gender in Table 2.A.3. Young women in each age group and in both rural and urban areas spend more hours in home-based domestic work than young men do. Still, it is interesting to note that young men also spend a considerable number of hours each week doing home-based work. The differences in the average number of hours spent on market work are very small. The same is true for hours spent studying. Still, summing up market and home-based work, young women work between 5 and 7 hours more than their male counterparts each week.[13]

Adding home-based domestic work into the categories of activities that children and youth undertake provides additional insight into the time use of young people (Table 2.A.4). The activities of children and youth may be divided into exclusive categories of those who do only home-based domestic work, those who do only market work, those who

Appendix Table 2.A.2 Rates of Labor Force Participation and Home-Based Domestic Work by Age, Gender, and Rural–Urban Areas[1]

	More urbanized areas				*Less urbanized areas*			
	Market	*Home work*		*Market + home work*	*Market*	*Home work*		*Market + home work*	
Age	*work*	*1+ hours*	*21+ hours*	*1+ hours*	*21+ hours* [2]	*work*	*1+ hours*	*21+ hours*	*1+ hours*	*21+ hours*
12–14										
Female	4.8	86.3	8.1	87.0	12.7	15.6	2.1	18.3	75.4	30.1
Male	11.0	68.5	2.0	73.8	12.8	37.4	33.2	1.5	61.4	38.5
15–17										
Female	20.2	88.3	22.4	91.1	39.8	24.3	80.6	36.0	86.2	53.5
Male	31.8	63.1	3.6	80.1	34.7	61.6	26.1	1.9	74.3	62.9

1. 100,000 or fewer inhabitants.
2. Refers to minimum hours of home-based domestic work and any number of hours of market-based work.

Note: Figures calculated using expansion factors.

Source: NES, 1995.

Appendix Table 2.A.3 Weekly Hours Spent in Home-Based Domestic Work, Market Work, and Study, By Age Group, Gender, and Rural–Urban (mean and median weekly hours)

	More urbanized areas				*Less urbanized areas*[1]			
	12–14		*15–17*		*12–14*		*15–17*	
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Home-based domestic work								
Mean	13.7	10.2	18.9	11.0	19.6	11.5	24.7	12.1
Median	14	8	14	10	15	10	21	10
Market work								
Mean	29.7	27.6	37.9	38.8	25.9	28.2	33.2	36.9
Median	28	24	42	44	18	26	30	40
Studying								
Mean	24.2	34.3	34.8	34.5	31.8	31.5	33.1	33.7
Median	35	35	35	35	30	30	35	35
Home and market work								
Mean	41.4	34.8	53.4	46.1	45.5	38.0	51.0	43.1
Median	36	31	55	49	42	36	49	43
Home work and market work and study								
Mean	65.1	60.5	71.3	66.5	65.2	64.0	69.9	63.7
Median	63	60	72	66	67	64	69	64

1. 100,000 or fewer inhabitants.

Note: Figures are calculated using expansion factors.

Source: NES, 1995.

combine home-based domestic and market work, those who combine market work and schooling, those who combine home-based work and schooling, those who combine both types of work with schooling, those who only attend school, and those who spend no time on any of the three activities. Home-based domestic labor of one hour or more per week is considered. A higher proportion of young women in both age groups and in urban and rural areas spends time only on household work. The differences are higher for females aged 15 to 17. Further, it is more common for women to combine home and market work, or school and home-based work. A smaller proportion of females devote their time exclusively to schooling. A large proportion of males divide their time between school and home-based work. A higher proportion of males combine market work with schooling, while a substantially larger proportion devote their time exclusively to schooling.

A crucial factor in evaluating the likelihood that a young person can combine schooling with their home- or market-based work is the number of hours spent on each activity (Table 2.A.5). Those who spend 20 hours or less per week on home-based domestic work are quite likely to be attending school. Further, the rates are similar for men and women. In urban areas, approximately 95 percent of children aged 12 to 14 are attending school, compared to over 70 percent of those aged 15 to 17. In less-urbanized areas, the rates are close to 90 percent in the younger age group and just over 60 percent for older youth. Young people who work more than 20 hours per week either in the market or at home are less likely to be attending school.

The inclusive definition of child and youth work suggests not only that young women are as likely to undertake work activities as young men, but also that the phenomenon of child and youth work is much more prevalent than suggested by estimates based on traditional definitions of employment. The inclusive definition implies a doubling of work activity rates among female children and youth. This suggests that for Mexico the number of children and youth who are economically active is approximately 25 percent larger than figures using standard definitions. These figures include home-based work undertaken as a primary activity or for more than 20 hours per week. It is likely that these findings would hold true in many developing countries, and suggests the need to reevaluate existing figures on the work activity rates of children and youth.

In terms of policy, the implications of using the inclusive definition of child and youth work are important. The inclusive definition substantially increases the work activity rates among female children and youth. Hence, this definition presents a much more widespread picture of the phenomenon of child and youth labor and much higher absolute num-

Appendix Table 2.A.4 Combinations of Home-Based Domestic Work, Market Work, and School, by Age Group, Gender, and Rural–Urban

	More urbanized areas				*Less urbanized areas*[1]			
	12–14		*15–17*		*12–14*		*15–17*	
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
None	0.4	0.9	1.2	3.1	0.5	1.6	1.4	5.2
Home work only	5.0	2.6	18.1	9.2	12.3	1.5	32.8	3.1
Market work only	0.4	2.8	1.4	13.1	1.2	10.7	4.3	36.2
Market and home work	1.2	1.6	12.8	9.7	4.9	2.1	13.4	7.5
School and market work	0.3	2.6	1.3	3.8	2.1	16.3	1.5	11.1
School and home work	77.4	60.4	52.9	39.4	47.8	22.9	29.4	10.0
School, market, and home work	2.6	4.1	4.6	5.1	6.4	7.4	4.3	6.2
School only	12.7	25.1	8.7	16.7	24.9	37.5	12.9	20.8
Sample size	3,792	4,011	3,928	3,830	1,148	1,138	999	1,034

1. 100,000 or fewer inhabitants.
Note: Figures are calculated using expansion factors.
Source: NES, 1995.

Appendix Table 2.A.5 School Attendance by Work Activity, Age Group, Gender, and Rural–Urban, 1995 (% attending, n)

	More urbanized Areas				*Less urbanized areas*[1]			
	12–14		*15–17*		*12–14*		*15–17*	
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
Home-based work								
1–20 hours	95.7	94.7	76.9	72.2	87.7	89.7	62.8	63.1
	2,694	2,368	1,962	1,576	571	340	262	158
21+ hours	61.0	68.0	30.0	34.5	39.4	—	16.2	—
	181	61	238	58	67		53	
Market work								
1–20 hours	85.5	90.3	63.8	67.8	71.6	87.8	41.1	68.2
	78	168	192	154	67	181	29	94
21+ hours	43.6	40.0	21.4	18.1	37.9	46.2	15.1	15.6
	51	98	125	174	25	102	155	68

Notes: Figures are calculated using expansion factors.
— = less than 20 observations.
1. 100,000 or fewer inhabitants.
Source: NES, 1995.

bers of children and youth who devote long hours to activities that are likely to impair the possibility of attending school.

Notes

1. See among others, Patrinos and Psacharopoulos (1994); Flórez, Knaul, and Méndez (1995); and Grootaert and Patrinos (1999).

2. Since recall from memory can get worse with time, this bias would be positively associated with age, and in particular with the time elapsed since the respondent was school-going age at the time of the survey.

3. This suggests additional caveats for the analysis. Salaried and nonsalaried income earners are grouped together, implying that the returns to physical capital may be included in the returns to human capital for business owners. Further, the use of hourly wages masks to some extent the reduced earnings that come as a result of only being able to work part-time, which may be more common for women. Finally, the exclusion of in-kind wages may generate a bias that is particularly strong for females because a large proportion work as domestic servants and part of their salary is paid in room and board. See Knaul (1995) for a detailed analysis of the differences in returns to human capital using a variety of measures of wages and earnings.

4. This issue is discussed in detail in the Appendix to this chapter.

5. The sample includes just over 300 municipalities.

6. The Heckman procedure is performed using full maximum likelihood techniques with corrected standard errors. The probit equations are modeled using a series of variables describing the physical characteristics of the home as a proxy for wealth. In order to respect identification restrictions, these variables are excluded from the earnings and wage functions. They consist of sets of dummy variables to indicate the predominant building materials of the dwelling; the roofing materials; the flooring material; and, whether the dwelling lacks an indoor bathroom, electricity, sewerage connection, or a telephone.

7. The results for the OLS regressions are presented and compared in Knaul (2000).

8. This finding is also likely to reflect a cohort effect related to factors such as improvements in school supply, or possible changes in the compatibility between child work and schooling.

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